

STEM EDUCATION :INNOVATION EDUCATION FOR YOUNG GENERATION IN ASEAN

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Abstract

Innovation is the process of making lives better. Whether it is a small improvement for one person or a breakthrough for society. On the largest scale, an innovation creates a shift that affects many aspects of our way of live. Shifts created by the introduction and adoption of railroads, cars, airplanes, radios, televisions, computers and the Internet, etc. have altered the way we travel, communicate, live, learn and think. To date and tomorrow's knowledge economy, The goal of getting an education isn't to solve some of yesterday's problems, but to tackle problems in the future that we don't know about today, so that students will need to be self-starters who are persistent and have an appetite for measured risk-taking. They will have to think for themselves and possess specialized or technical knowledge to thrive.STEM is a curriculum based on the idea of educating students in four specific disciplines; science, technology, engineering and mathematics. It is an interdisciplinary and applied approach rather than teach the four disciplines as separate and discrete subjects, STEM would integrate them into a cohesive learning paradigm based on real world applications. The purpose of this paper is to understand how to improve learning for new generation in ASEAN by STEM education. In a meaningful way, we are starting to see the dawn of incredible innovation in teaching and learning in ASEAN. Finally, STEM has impacted in education both in building our knowledge and skills as well as our understanding towards one another.

Keywords: STEM education, Innovation Education, young generation

Background

In the 21st century, innovations have become increasingly important as the process of making lives better. Whether it is a small improvement for one person or a breakthrough for society. On the largest scale, an innovation creates a shift that affects many aspects of our way of live. Shifts created by the introduction and adoption of

railroads, cars, airplanes, radios, televisions, computers and the Internet, etc. have altered the way we travel, communicate, live, learn and think. To date and tomorrow's knowledge economy, The goal of getting an education isn't to solve some of yesterday's problems, but to tackle problems in the future that we don't know about today, so that students will need to be self-starters who are persistent and have an appetite for measured risk-taking. To succeed in this new information-based and highly technological innovation society, students need to develop their capabilities to levels much beyond what was considered acceptable in the past (National Science foundation, 2012) and they will have to think for themselves and possess specialized or technical knowledge to thrive. STEM is the interdisciplinary integration curriculum based on the idea of educating students in four specific disciplines; Science, Technology, Engineering and Mathematics and by now, its meaning implied to Economic ,Health and Environmental (Capraro, Capraro & Morgan, 2013; Gonzalez & Kuenzi, 2012; Zollman, 2011). Apparently, it is an interdisciplinary and applied approach rather than teach the four disciplines as separate and discrete subjects, STEM would integrate them into a cohesive learning paradigm based on real world applications (Hom, 2014). The purpose of this paper is to understand how to improve learning for new generation in ASEAN by STEM education. In a meaningful way, we are starting to see the dawn of promising innovation in teaching and learning in ASEAN.

Finding and Discussion

After we examined 8 articles related to STEM education implementation across Thailand and some countries. To date, STEM education movement has gained dramatic momentum nationwide. It has been based on a theoretical model, problem-based approaches, and project-based approach. This approach has become increasingly visible in educational implementation studies as an essential step toward understanding the parts of STEM educational interventions that are most closely associated with desired student outcomes (Damschroder et al., [2009](#)). As characters of STEM focus on integration, establish relevance, learning innovation skill, active learning, challenge students which are great beneficially for students move forward into 21st century. STEM education helps to justify in predisposing factors and solve a crucial problems in local community right way. Especially, for children at primary and high school level, it will be able to develop their cognitive skills by learning in engineering design process (EDP) and using technology such as: iPad, smart phone, and Tablet (Aronin & Floyd, 2013; Watthananon, 2015). Most high school STEM programs have adopted national standards of curriculum alignment; the common strands have aligned themselves to increase student engagement, motivation, and learning. The emergence of STEM curriculum in the public educational system provides opportunities for all level learners to master skills and content important for 21st Century learning. Using a variety of activity-based learning models, students are provided opportunities to accelerate to rigorous depths of learning. Learning is facilitated so that students are encouraged to delve deeper into topics that interest them individually. Moreover, STEM can be able to improve students' reasoning skills, critical thinking skills, creativity, and innovation through integrated and connected STEM curriculum and pedagogical practices provides equity among learners from diverse backgrounds. STEM curriculum has the potential to provide true mastery for all learners (Meyrick, 2011). However, in practice, school leaders, teachers and stakeholders in schools, lack cohesive understanding of STEM education, particularly, those teachers struggle to make connections across the STEM disciplines.

Consequently, students are often disinterested in science and math when they learn in an isolated and disjointed manner missing connections to crosscutting concepts and real-world application. (Kelley & Knowles, 2016) Therefore, they should understand their STEM education identity as rooted in pedagogy, transferrable skills, school culture by integration of Science, Mathematics and Occupations and Technology and Engineering design process (Intalapaporn, et al, 2015). Addition, more questions about the goals of inclusive STEM in schools and the STEM discipline outcomes should be reasonably expect to see from STEM. (Melanie, et al. 2016). Eventually, many researchers believed that STEM education approach would lead the ASEAN to be smart society.

Conclusion

The findings highlight that STEM has impacted in education system including building our knowledge and innovative skills as well as our understanding towards one another. Additional, stimulating the thinking process and motivation of learning in order to develop intellectual skill is worthy of learning process. Therefore, ASEAN students and teachers should synthesized a concept and guidelines of STEM education applying in their learning management.

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